EXHIBIT 10-1

HydroGeoLogica Technical Memorandum

HydroGeoLogica TECHNICAL MEMORANDUM

To: Ian Ream, Dan Johnson
Company: Florence Copper Inc.
From: Brent Johnson, Erik Guldbech
Date: May 31, 2019
Subject: **Florence ISCR Project – Process Fluids and Solids Chemistry Update**

Introduction

Florence Copper Inc. (Florence Copper) has constructed a pilot-scale Production Test Facility (PTF) in Florence, Arizona as part of a planned in-situ copper recovery (ISCR) mining operation. The PTF and subsequent planned operations involves specific chemical, hydrogeological, and water management processes.

As part of the planning and design of the PTF and planned site-scale operations, Florence Copper has requested HydroGeoLogica (HGL) work with Haley & Aldrich to update predictions of the chemistry of process fluids and solids during operations. This memorandum describes the results of the update which were developed using measured values from the field (e.g., groundwater), laboratory results, historical data, and modeling using Geochemists Workbench (GWB 12, Bethke, 2018). Results represent an update of previous estimates chemistry predictions provided by DB Stephens, (2014), and SWS (2012).

Solution and Solid Material Chemistry Descriptions

Table 1 shows a chemistry summary of key mining solutions and one solid (treatment pond sediment) material. In some cases, predicted solutions are identical to previous predictions. In other cases, predictions have been updated to account for recent testing results and/or mine plan changes. A description of each solution is provided below.

Solution 1: Sulfuric Acid Composition
Sulfuric acid solution designed for mineral leaching is commonly acquired through a distributor and is available in a wide range of concentrations. Florence Copper anticipates using a leach solution

comprising 99.5% water and 0.5% sulfuric acid for commercial mining. The estimated composition of Solution 1 in Table 1 is typical of a sulfuric acid solution provided by distributors which is then diluted with water for use on site (Asarco-Martin, 2018).

Solution 2: Forecast Composition PLS

The composition of pregnant leach solution (PLS) from in-situ copper recovery operations is characterized by high sulfate concentrations resulting from sulfuric acid present in raffinate. Florence Copper conducted a pressure rinse test (PRT) to estimate copper extraction kinetics, PLS grade, and acid consumption. The test apparatus consisted of seven, pressurized vessels (PRT #29 - #35) containing mineralized core. Raffinate, and then rinse solutions, were introduced into PRT #29 and then flowed sequentially through the other PRTs until exiting the test at the base of PRT #35. The leaching phase of testing extended 225 days and was following by a 340-day, three-phase rinsing cycle. The results of the PRT program represent an undiluted PLS solution. Considering groundwater will mix with PLS throughout operation, the forecast composition of recovered PLS (Solution 2, Table 1) is expected to be a mixture of 90% PLS and 10% groundwater.

Geochemical calculations relied on results from PRT #35 because it was the last section of core connected in series and thereby represented the most mature PLS. Florence Copper conducted daily metals analysis from solutions collected from each section of core during the PRT and the results were averaged and presented as weekly composites. Solution 2 represents the average concentrations of metals and some anions from these weekly composites (#1 - #24) during the leaching period, day 58-225, to represent typical PLS. Average sulfate concentrations during the leaching phase were not available therefore the sulfate concentration on the first day of the rinse phase (before any dilution was observed) was used as a proxy. GWB was used to estimate pH by setting the solution in equilibrium with atmospheric CO_2. Sample PW-2 (Turner Laboratories) was used to represent the expected composition of groundwater during commercial operations.

Solution 3: Forecast Composition of Raffinate

The solvent extraction (SX) process removes copper from PLS, leaving a barren acidic solution, or raffinate, available for re-use. The Florence Copper SX plant consists of four reverse-flow mixer-settlers and associated facilities. Reactions in an SX plant can vary significantly between facilities, resulting in some uncertainty in estimating an exact solution composition. Florence Copper anticipates using the organic reagent ACORGA M5774 or similar, to extract copper from PLS and estimates a 90% copper recovery rate. Testing by the manufacturer of ACORGA M5774, Cytec Solutions, indicates physical entrainment of specific impurities (Al, Si, Ca, Mg, Fe, Zn, and Mn) is 0.01% to 0.2%, depending on the impurity. Forecast composition of raffinate (Solution 3) reflects a 90% decrease in copper compared to PLS and a 0.01% - 0.2% decrease in the PLS metal impurities.

Solution 4: Forecast Composition of Solution Impoundment

Any water that has no economic value and is not able to be directly discharged due to constituents elevated above Arizona Water Quality Standards is considered waste water. Waste water will be directed to, and stored in, a lined impoundment, treated to maintain a circumneutral pH (at least 6.5) using lime (CaO), and evaporated.

The solutions directed to the impoundment are expected to consist primarily of water extracted from the proposed well field with sulfate exceeding 500 mg/L and copper concentrations below commercial grade (0.2 mg/L). Solutions satisfying these criteria will be generated during the initial leaching and the rinsing phases of an ore block. Additionally, a small amount of raffinate bleed will be neutralized and diverted to the solution impoundment.

A representative "waste water" quality was estimated by mixing the three streams of source water: rinse water (85%), background groundwater (10%), and raffinate bleed (5%). The rinse water component was simulated by mixing representative water from each phase of the three-phase rinsing cycle under the assumption that, at any given time during commercial operations, there will be approximately a third of all rinse water extraction wells in each of the three phases of rinsing. During the leaching program, the three-phase block rising cycle consisted of 62 days of rinsing with fresh groundwater, 89 days of sodium bicarbonate rising, followed by another 27 days of groundwater rising. Commercial scale production anticipates three-phase rinse cycles extending 18 months (6 months for each phase at ½ pore volume per month). Using results from PRT #35, a 30% groundwater rinse, 30% sodium bicarbonate rinse, 30% secondary groundwater rinse was mixed in GWB. This mixture serves as a proxy for any pumped solution considered waste water. The 5% raffinate bleed (Solution 3) was added to simulate discharge from SX/EW plant operations. Finally, the resulting waste solution was titrated (in GWB) with 1.6 g/L of lime to pH 6.5 while allowing selected oxy-hydroxide oversaturated mineral phases to precipitate out of solution. Waste water, Solution 4 (Table 1) reports solution concentrations following the titration. The following mineral phases were allowed to precipitate during the simulation:

- Aluminum hydroxides
- Aluminum sulfates
- Barite
- Bronchantite
- Calcite
- Calcium phosphate
- Cobalt hydroxide
- Jarosite

- Copper hydroxides
- Copper sulfate
- Copper phosphate
- Ferrihydrite
- Gypsum
- Lead hydroxides
- Magnesium Hydroxide
- Nickel Hydroxides
- Zinc Hydroxides

Solid 5: Forecast Composition of Solution Impoundment Sediment
Solid 5 represents the predicted chemical composition of solids precipitated, by weight, during the simulated (GWB) titration of 1.6 g/L of lime. Concentrations of metals removed from solution by both adsorption and precipitation processes are included in sediment totals.

Solution 6: Forecast Composition of Solution After Block Rinsing
After copper concentrations decline below commercial grade within each leaching block, raffinate injections cease and the three-phase rinse cycle (total of 9 pore volumes) begins. In the PRT, nine pore volumes were eluted by day 497 (excluding a brief period of ferric sulfate injection to evaluate in-situ treatment options). Results from day 497 represent solution composition of the ore block after completion of three phase block rinsing.

Solution 7: Composition of Make-up Water
Results from groundwater testing of PW-2 (Turner Laboratories) is the expected composition of make-up water to be used on site.

References

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BHP Copper, 1997. Florence Project Final Pre-feasibility Report. Growth and Technology Group. December 1997.

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Florence Copper, 2016. An Investigation into In-situ Leach Simulation on Drill Core Samples from the Florence Copper Project. October 25, 2016.

SWS, 2012. Geochemical Evaluation of Forecast Process Solutions at Florence Copper Project for Pilot Testing of In-situ Copper Recovery. Schlumberger Water Services. February 22, 2012.

Sources of data:

Florence Copper project files and database and APP submittals (2014-2018)

Table 1 - Solutions and Solid Materials Chemistry Summary

		1	2	3	4	5	6	7
	Arizona Water Quality Standard	Composition of H_2SO_4	PLS	Raffinate	Water Impoundment Solution with 1.6 g/L Lime Treatment	Water Impoundment Sediment After Lime Treatment	Groundwater After Block Rising	Makeup Water
	mg/L	mg/L	mg/L	mg/L	mg/L	%	mg/L	mg/L
Metals								
Aluminum	None	na	2,356	2,332	0.006	6.36%	< 0.2	<2.0
Antimony	0.006	0.05 - 0.15	0.45	0.44	0.45	< 0.01 %	0.0015	<0.2
Arsenic	0.05	0.1 -0.4	0.78	0.77	0.16	0.02%	< 1.0	<0.0005
Barium	2	na	0.45	0.45	0.0046	< 0.01 %	0.0014	<0.05
Beryllium	0.004	na	0.0001	0.00005	na	< 0.01 %	na	<0.002
Cadmium	0.005	na	0.45	0.45	0.19	< 0.01 %	0.0014	<0.002
Calcium	None	na	507	502	448	7.88%	160	61
Chromium	0.1	na	1.80	1.78	0.25	< 0.01 %	0.0015	<0.03
Cobalt	None	na	6.31	6.24	< 0.001	0.02%	< 0.3	<0.1
Copper	None	0.2 - 0.5	1,275	127.5	2.99	1.51%	0.15	0.044
Iron	None	7 – 15	1,656	1,639.44	0.00003	4.07%	0.016	0.34
Lead	0.05	0.1 - 0.7	1.80	1.78	0.05	0.01%	< 2	<0.02
Magnesium	None	na	1,799	1,781	346	0.03%	6.95	14
Manganese	None	0.05 - 0.15	62	61	10.38	< 0.01 %	0.20	<0.02
Mercury	0.002	na	0.00008	0.00008	0.0001	< 0.01 %	< 0.0001	<0.001
Nickel	0.1	0.07 - 0.20	3.60	3.57	0.62	< 0.01 %	0.0076	<0.05
Potassium	None	na	513	508	186	0.02%	15	6.2
Selenium	0.05	na	0.0020	0.0020	0.002	< 0.01 %	na	<0.04
Silver	None	na	0.45	0.45	0.08	< 0.01 %	< 0.08	<0.1
Sodium	None	na	406	402	701	< 0.01 %	230	120
Thallium	0.002	na	0.45	0.45	1.01	< 0.01 %	< 3	<0.05
Zinc	None	0.05 - 0.75	26	26	4.10	< 0.01 %	< 0.7	0.095
Anions								
Bicarbonate	None	na	< 0.0017	< 0.0017	1.40	< 0.01 %	120	160
Chloride	None	< 1	16	15.8	15.63	< 0.01 %	227	160
Flouride	4	na	0.025	0.025	0.025	< 0.01 %	na	<0.5
Nitrate	None	< 5	0.82	0.81	0.05	< 0.01 %	na	1.9
Phosphate	None	na	269	267	0.96	0.45%	< 5	<0.5
Sulfate	None	1.77×10^6	30,954	30,644	6,981	79.55%	630	76
Sulfurous Acid	None	2.0 - 15	na	na	na	na	na	na
Field Parameters								
TDS	None	na	39,527	33,383	5886	na	1,304	550
pH	None	na	1.73	1.64	7.02	na	6.22	7.2
Radiochemicals								
Uranium	None	na	0.0013	0.0012	0.0013	< 0.01 %	< 1	0.013